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REMARKS/ARGUMENTS

Favorable reconsideration by the Examiner is respectfully requested in light of the above amendments and the accompanying remarks.

Independent Claims 1 and 7 have been amended to include the recitation that the undercoat layer is "characterized by the absence of a noble metal." The preamble and body of Claim 7 has also been amended to further clarify what is claimed by the Applicants. New Claims 12 and 13 have been added.

Claims 7 through 11 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Impendent Claim 7 has been amended to overcome these rejections. In particular, the preamble of Claim 7 has been amended to recite a "vehicle comprising" to further clarify what is claimed by the Applicants. Accordingly, it is respectfully requested that the rejection of Claims 7 through 11 as being indefinite be withdrawn.

Claims 1, 3 through 5, 7, and 9 through 11 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,057,483 to Wan. Claims 1, 3 through 5, 7, and 9 through 11 have also been rejected under 35 U.S.C. § 103(a) as being unpatentable over German Patent No. DE 19713103 to Koda et al., which corresponds to U.S. Patent No. 6,090,744, in view of Wan.

The present invention is an exhaust gas purification catalyst that can suppress thermal deterioration of the catalytic substance while maintaining excellent purification capabilities. The catalyst comprises a carrier having an undercoat layer adhered to the carrier and a catalyst carrying layer formed on the undercoat layer. The catalyst component (noble metal) is supported on the outer surface of the catalyst carrying layer. The undercoat layer comprises an oxygen- absorbing substance and a heat resistant inorganic oxide. The undercoat layer does not comprise any catalyst component, and the catalyst carrying layer physically separates the oxygen-absorbing substance from the catalyst component.

Separation of the catalyst component and the oxygen-absorbing layer provides several advantages. It reduces the possibility that the oxygen-absorbing substance and

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the catalytic component may form a complex that results in a reduction in purification capabilities of the catalyst and a reduction in the oxygen absorbing ability of the undercoat layer. In addition, an improvement in oxygen-absorbing ability also helps to prevent sintering of the catalytic component so that the catalyst has excellent low-temperature activity.

In contrast, both Wan and Koda teach a catalyst comprising a carrier having two-catalyst-carrier layers disposed thereon. In both references, each layer comprises a catalyst component. For example, Wan discloses that the first coat "may contain at least a major portion of the platinum [catalyst] component of the catalyst" in combination with ceria (oxygen-absorbing compound). See column 5, lines 47-51, and column 6, lines 37-41. Similarly, Koda teaches that each layer contains a catalytic component. See column 4, lines 31-33. The lower catalyst layer has palladium as a catalytic component, and that the upper layer has platinum and rhodium as the catalytic component. See column 13, lines 49-51, and column 14, lines 1-5.

Independent Claim 1 and 7 have been amended to include the recitation that the undercoating layer is "characterized by the absence of a noble metal." As discussed above, neither Wan nor Koda disclose or suggest a catalyst having an undercoat layer that is deposited below a catalyst-carrying layer, which comprises an oxygen absorbing substance but does not comprise a noble metal. In sharp contrast to Wan and Koda, Applicants teach away from placing a noble metal with an oxygen-absorbing substance.

Specifically, the specification states "[u]sually, if an oxygen-absorbing substance ceria (CeO_2) and a noble metal rhodium (Rh) coexist together, they form a complex at high temperatures to cause a reduction in the activity of the rhodium and in the oxygen-absorbing ability of ceria. However, when added to the undercoat layer comprising the heat-resistant inorganic oxide, ceria does not form a complex with rhodium and can hence retain its excellent oxygen-absorbing ability." See page 7, lines 6-13. Also, "the addition of an oxygen-absorbing substance to the undercoat layer comprising the heat-resistant inorganic oxide can prevent the oxygen-absorbing substance from forming a complex with a noble metal." See page 4, lines 17-20.

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In addition, separating the oxygen-absorbing substance from the noble metal helps prevent reduction in the purification capabilities of the catalyst and also as stated in the specification "if the oxygen-absorbing ability is improved, the sintering of the noble metals is suppressed to minimize a reduction in catalytic activity. Moreover the light-off temperature (i.e., temperature at which the catalyst becomes active) can be lowered to yield a catalyst having an excellent low-temperature activity." See page 7, lines 24-25 and page 8, lines 1-4. This result is exemplified in Evaluation Test 3 (Light-off test) and Table 4. See page 14, line 20.

Thus, independent Claims 1 and 7 as amended, and all claims dependent thereon, are patentable over the cited references, whether considered individually or in combination because, Wan and Koda do not disclose or suggest a catalyst comprising a layer having an oxygen-absorbing substance, which does not include a noble metal, and wherein the oxygen-absorbing substance is separated from the noble metal by the catalyst-carrying layer.

Newly added Claims 12 and 13 are each dependent on independent Claims 1 and 7, respectively, and are therefore also patentable over the cited references. Claims 12 and 13 include the recitation that the undercoat layer "consists essentially of" at least one oxygen-absorbing substance and at least one heat-resistant inorganic oxide. This amendment is also supported by the specification because it excludes substance such as noble metals that materially affect the novel properties of the invention (i.e., suppress thermal deterioration of the catalytic substance and have excellent purification capabilities).

None of the references, either alone or in combination, disclose or suggest a catalyst having undercoat layer having an oxygen-absorbing substance that does not contain a noble metal. Applicants respectfully submit that Claims 1 through 5, and 7 through 13 are patentable in light of all references of record, including the cited references.

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CONCLUSION

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1 through 5, and 7 through 13 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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Grace R. Rippey

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Date